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Accessibility of TV media for the dual-sensory impaired in Finland and in the UK

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Abstract

One of the most used media is television. Almost all of us have a television set at home. Television is commonly thought also to be accessible, and for most of us, it seems to be so. However, there are people who cannot enjoy televised programmes without special measures. These measures include subtitling, audio description and sign language interpretation. All these are mentioned in the in-force EU Audiovisual Media Services Directive.

In this article we look at how these are broadcast in different countries, what equipment is needed for receiving them, and how accessible the programme information (EPG) and menus to choose these accessibility options are, as they most often are not automatic, but have to be turned on in the accessibility options menu or the TV set or digital terrestrial receiver box (digibox). This article focuses on accessibility with special interest on the dual-sensory impaired perspective over four days comparing two countries: the UK where all three accessibility features mentioned above are well-established and Finland, where accessibility features concentrate mainly on subtitling.

Keywords: accessibility, TV media, deafness, blindness, sign language, subtitles

Introduction

Most people have a television set at home. Television broadcasts and television as media is commonly thought to be accessible, and for most of us, it seems to be so. However, there are people who cannot enjoy televised programmes without special measures. There are several different means for making a TV programme accessible for the hearing or visually impaired people. These include subtitling for the hearing impaired, sign language interpreting for the sign language users, and audio description for the visually impaired people. However, these options most usually have to be selected and activated from the menu options separately.

Subtitling is used for foreign language programmes and their translation from the source language into the target language or languages of the country the programme is shown in. Subtitling can also be used within the same language, that is the soundtrack and the subtitles of the programmes are in the same language. In other cases two different languages can be used within the same subtitling scene. In that case two subtitling rows are used and one language occupies the upper row and the bottom row is used for the other language. This is used widely in opera subtitling.The two-language subtitling scheme is also in use in Finland on some oc-

casions as Finland is a bilingual country by legislation. Dubbing is another means for language translation in TV programmes, where the original programme soundtrack is spoken in the source language, and there is a second simultaneous soundtrack where one or several actors provide the soundtrack in the target language. However, dubbing is not in the focus of this article. Another means for this is to use two complementary soundtracks, where one (source) is silenced and the other (target) is played back following the pace of the programme. This is widely used in children's programmes.

Audiovisual Media Services Directive – passed in 2007 and amended in 2010 [1] – is in force: it indicates specific means to achieve accessibility, namely (but not limited to) subtitling, audio description, sign language and easily understandable menu navigation. Subtitling is one of the most commonly used techniques to provide accessible content to all (including the hearing impaired, the elderly and foreign language speakers), with huge expansion potential for the future [2]. In audio description one needs to have an interpreter's mindset, where one thinks about which words complement the film narrative the best (for a further discussion on word choices and film narrative, please see [3]). Audio description is well established in some European countries while in others it is rare or even unknown [4]. In this article we explore one country where audio description is well-established and one where audio description is very rare. When it comes to subtitling, in Finland the media houses provide them, while in the UK subtitling and audio description is provided by separate companies, such as Red Bee Media and Deluxe. In Finland the occasional audio description is provided by independent entrepreneur service providers.

Detailed objectives and expected results

There are multiple groups who are using the various accessibility features on TV programmes. These include not only visually or hearing impaired, but also non-disabled groups such as foreign language users and the elderly people.

Visually impaired people

Audio description for this group allows a person to understand what action or event is taking place at that particular moment either in real-time or slightly delayed. This process means the user is able to follow the non-verbal information that has taken place during a TV programme. In some cases low vision aids may be used to enhance screen images as some visually impaired users may have narrow vision field, no central vision or blurred vision. To overcome these obstacles they may have larger and higher definition (HD) TV screens, or use magnifiers, monoculars or other low vision aids. This is where the layout and colour schemes on the TV menus are important, the colour scheme may help or hinder independent browsing of the menus and the electronic programme guide (EPG). A person with a visual impairment may benefit from high contrast colour scheme, such as white on black, while other colour schemes, such as black on white may give the user glare, which hinders independent use of the TV menus and EPG.

Hearing impaired people

For this group audio description may not be such a high priority since they use their vision to see the action or event taking place. However, subtitling and / or sign language becomes the most important in order to follow the spoken language. Furthermore this group may or may not use hearing aid devices like behind the ear aids or cochlear implants, which may be supplemented by an inductive loop system. This is connected to the TV system. This enables the background noise from the environment to be either silenced or diminished during viewing, depending on the system used. In some cases hearing aid devices allow both the air and telecoil-conducted sounds to input the devices. Sometimes the ratios of these two sound inputs can be individually adjusted according to the individual needs. Here, the user is able to browse TV menus and EPG independently, but may not be able to follow the full potential of a film unaided by the subtitling scheme.

Dual-sensory impaired people

For this group users may use a combination of equipment outlined in the two previous groups. In addition they may use bluetooth neckloops. These enable the users to listen to the TV programmes through their hearing aid devices, but can also be used with internet-based TV programme platforms (BBC iPlayer in the UK and Yle Areena in Finland) connected to either a mobile, tablet or computer. Furthermore the hearing impaired and dual-sensory impaired groups may use interpreting services which may vary according to their specific needs. The methods may include for example hands-on signing for the totally deafblind users or speech-to-text interpreting for the people who are hard-of-hearing and have a visual impairment as well.

Other groups

This category consists of various types of groups ranging from the elderly to people with learning disabilities, and other special disability groups. These users may benefit from some or all of the accessibility options for example audio desription, subtitles, sign language interpretation, in connection or addition to other personally oriented augmented and assisted communication (AAC) methods. In some cases recording of various TV programmes may be beneficial to the user as when they are playing back the recorded material they are able to pause, or rewind should further explanations be required. This may be appropriate for slow learners or immigrants who are learning the language. One special group benefitting from subtitling is people with sound hypersensitivity, who use subtitling to follow the TV programmes while they mute the broadcast where available.

Accessibility of accessibility features on TV

In the UK a TV set has a voice guidance option: the guide programme speaks to you which channel you are on when you change from one channel to another, it identifies the programme, its timing, and the accessibility options available. TV, DVD and smart talking digibox all have options for audio description, TV also has voice guidance possibility. The figures 1 and 2 display the different colour schemes provided by TV (Figure 1) or the digibox for the visually impaired (Figure 2).

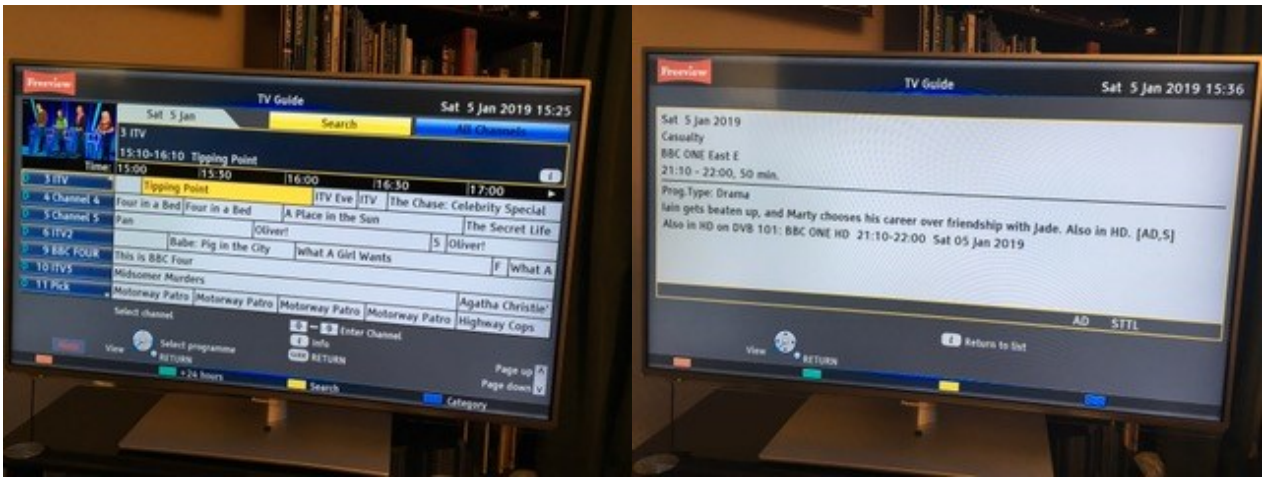

Figure 1. Electronic programme guide (EPG) layout from TV broadcast, whole EPG on the left and a single programme information screen on the right. NB: colour layout.

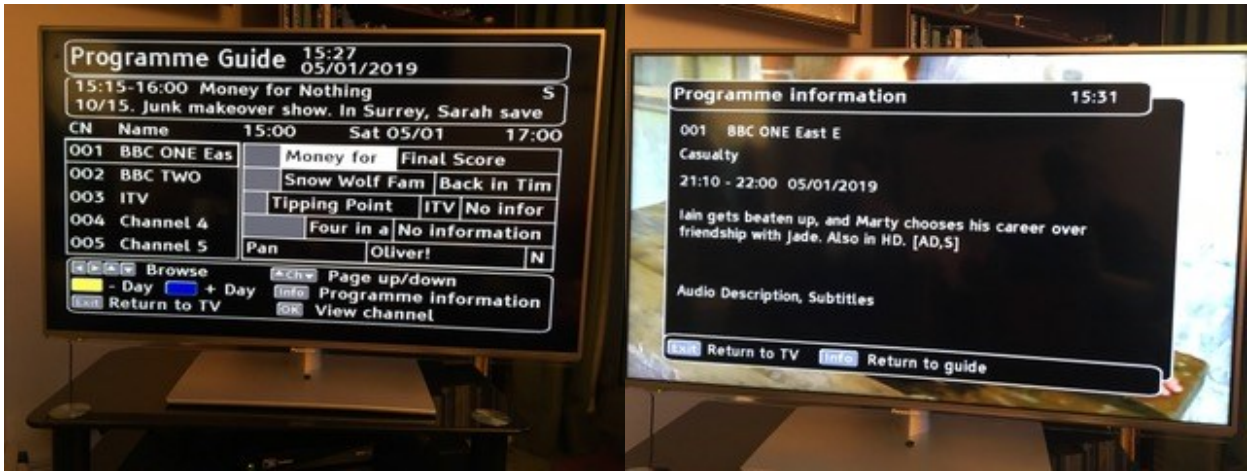

Figure 2. Electronic programme guide (EPG) layout from talking digibox, whole EPG on the left and a single programme information screen on the right. NB: colour layout.

The smart talking digibox gives different colour layout option everywhere as well as the accessibility options, that is if the programme has subtitles, sign language or audio description. If you are using the voice guidance on TV, there will be two sound sources, and with a hearing impairment it is difficult to decipher which is which, programme info or TV programme sounds, however, this might be usable for the visually impaired people who have normal hearing or a slight hearing impairment as the TV programme guide gives you date, timing, programme type and plot, and accessibility option, and in the further information table view it suppresses the TV voices. In the UK one can use so-called red button services to tune into a radio commentary for sport, such as a cricket commentary, as there is no audio description available for live sports as of now.

In Finland some of the TV sets have two colour schemes in their menu, but not all. Some of the programmes have subtitling provided for all, such as foreign language programmes, but the Finnish language programmes have separate system of subtitling which has to be separately chosen within the subtitling options. What makes matters more difficult is, that the choice is not obvious, but the subtitling choice is called hollanti (Dutch language). There is also option for audio subtitling, where the subtitles are made audible by synthetic speech in a separate pipeline. This introduces further delay into the audio track. Also, these options are not easily found individually as the TV menus do not provide audio options. Nevertheless, when these options are successfully selected, the selections are treated as default ones. Also in Finland there are some pilot initiatives for audio describing live sports, such as football games. These, however, frequently require internet access for the online TV platforms.

Accessibility user experience (ux)

For an individual with a visual impairment as well as a hearing impairment the colour scheme selection in the subtitles is important. This improves the contrast between background and the subtitles text. Also, the changes in the layout of the subtitle pane within the TV picture are difficult, especially for a person with a restricted field of vision. Sometimes one might be able to choose the size of the subtitling, but the larger the pane the more it obstructs the original TV picture. Furthermore, a visual impairment also may affect the reading speed, making it slower and thus add difficulty in benefitting from subtitling in connection to TV programmes.

Subtitling does not only compensate for an individual's hearing loss in form of checking a missed word or words in the dialogue, but also enables the person to watch

films and documentaries in a non-native language. Subtitling is widely distributed online within film download websites and/or online TV platforms, where programmes may be watched on stream or they may be downloaded for off-line viewing [5]. Subtitles also describe non-linguistic, auditory events, such as singing or music playing, and that might help the users with a hearing loss to decipher the nature of the background noises.

When a person has both visual and hearing impairment, there are further preferences for example the voice quality - some of the hearing aid users are able to hear male voices better than female voices [6]. Also, the assistive hearing devices might affect the voice parameters that are more intelligible, for example where hoarseness might lower the intelligibility for a normally hearing listener, it might add to the intelligibility when the sound is coming to the hearing aids via a FM receiver or a telecoil system. Even if there is a blind person watching the TV, subtitling still can add to the TV experience, as subtitling might be used when checking spelling of words, especially when watching TV with friends or family members.

Audio description might at first feel that it interrupts the flow of the programme [6], but it adds all-important visual scenes and non-audible events to the audio input so that a visually impaired person can follow what is going on in the programme. One challenge for an audio describer is where there is a musical such as Sound of Music or the Beatles' Hard Day's Night is how to provide the audio description so that it doesn't obstruct the flow of the programme. Audio description tells the follower of the programme about visual events, in otherwise silent moments. The volume settings are in default such, that audio description track is lower in volume than the original programme's audio track. They are provided in two separate audio tracks. However, it has also been noted that some films have too high volumes of audio description which affects the overall enjoyment in watching it. This needs to be carefully monitored.

It is noticeable that audio describers vary in perceived audio description depth and quality. This comes through from voice quality parameters and choice of words. A good audio description complements the events and the soundscape of a film or a TV programme so that it flows as a whole. It allows the blind and dual-sensory impaired individuals to follow the programme in more detail (for a further discussion, please see [6]). Sometimes audio description contains practically so little, that you get lost without the information on what is happening in the visual represention of the programme. That being said, audio description does require skill and dedication.

Channels differ in the amount of audio description they provide. There are also differences in the types of programmes the audio description is provided. These differences in amount and type of programmes are further discussed in the results section of this article.

Material and methods

Data consists of programme information during four days (24.-27.11.2018) in two countries, Finland and the United Kingdom. The time slot includes both working days and a weekend, as the programme types might vary according to the days of the week, as to the prime time of the TV programming varies between working days and weekend. We chose Essex county in the UK and Uusimaa region in Finland as the sources of the programme information as there are regional varieties in television programmes, including regional news. Furthermore, there are regional TV programmes in regional languages, such as Scottish Gaelic in Scotland and the Sapmí (Lappish) language programmes in Finnish Lapland. We included three so-called main channels in the dataset: BBC1, BBC2 and ITV in the UK and YLE1, YLE2 and MTV in Finland as their respective programme guidelines, their foci and the fact that they are all freeview are matched across the countries. However, there are other channels on freeview in both countries, which may have a particular focus on their programmes or they may be focused to a specific audience or the programmes may be in a particular language. These particular channels were also chosen for their complete coverage of rural areas, as other freeview channels might have restrictions based on e.g. geographical is-

sues such as hills or valleys due to the broadcast infrastructure. Existence of these other channels, which are not within the research focus, may skew the results of this study in multiple ways. These are further discussed in the discussion section of the article.

Figure 3. Examples of symbols for accessibility features. Two on the left are for audio description, the two on the right for sign languag in the UK and Finland.

There are different TV programme categorisation schemes across the world. In this article, we adopted the BBC genres categorisation (7) and used the top-level divisions when analysing the TV programmes in the two countries. The categories are: children's, comedy, drama, entertainment, factual, learning, music, news, religion & ethics, sports and weather programmes. We looked at the percentages of the programmes broadcast, that were subtitled, audio described, and/or signed. Sometimes these accessibility features are indicated in the TV programme guides with symbols for them (Figure 3). We used the EPGs and specialised TV programme magazines in both countries for the dataset. We provide two examples of different colour schemes and layouts on EPG (Figures 1, 2), which can influence the possibility of using the EPG independently, especially if the user has a visual impairment.

The accessibility features discussed in this article are interlanguage and intralanguage subtitling, audio description and sign language interpret broadcasts. In Finland the TV programmes use mostly interlanguage subtitling, and sometimes two-language subtitling, as described in the introductory section of this article. In the UK most of the subtitling are broadcast as intralanguage subtitles. This might reflect either the position of English as a widely-used language in the world or the fact that Finland imports programmes in many different language, and at the same time has three spoken languages in the country, i.e. Finnish, Swedish and Sapmí (Lappish) languages.

Results

The overall figures show that there are differences between countries and between the channels in the accessibility options (Table 1). In both countries subtitling is the most used means of providing accessibility, while in Finland signed programmes are in the second place with no audio described programmes during the research period. In the UK it seems that there are more audio described programmes than signed programmes. Focusing on channels, they differ in their percentages in each of the accessibility option categories. In the Finnish dataset, YLE1 was the only channel providing signed programmes, but when it comes to subtitling, all three of the channels seem to provide them in some quantity, that is 21%±6% of their total programme number. The similarity of the percentages can also be found in the UK subtitling schemes, where the percentages are very similar as well, 93%±5% of the respective totals. Both audio described and signed programmes vary in their percentages more across the channels in the UK.

Looking at the percentages across the categories and channels (Table 2), the situation is represented as much more varied, as some of the categories have far greater coverage than others. The coverage distribution also shows, that the average percentages by channels over all categories tend to overlook the fact that not all the categories have accessible options for following the programmes. In other words, even though e.g. BBC1 has a subtitling coverage of 94% there are still categories with no subtitled programmes over these four days (Table 2). This might relate to the different types of programmes, as some categories tend to have more pre-recorded, manuscripted programmes while others focus on direct broadcasting. These differences also affect the different accessibility options available with current technologies. However, these results by categories highlight also the fact, that it is possible to provide the different accessibility options for different types of programmes. The accessibility option percentages by categories may also reflect the overall focus audience or broadcasting strategies of the channels respectively.

Table 1. TV accessibility features in percentages by channels.

	Subtitles	Audio description	Signed
BBC1	94%	19%	0%
BBC2	99%	13%	9%
ITV	88%	13%	5%
	Subtitles	**Audio description**	**Signed**
YLE 1	28%	0%	28%
YLE 2	14%	0%	0%
MTV 3	23%	0%	0%

Table 2. TV accessibility features by programme categories in percentages of total.

Subtitles	BBC 1	BBC 2	ITV	YLE 1	YLE 2	MTV 3
Children's	25	25	0	0	1	0
Comedy	0	50	25	0	0	25
Drama	100	42	100	77	26	57
Entertainment	100	100	84	0	0	0
Factual	100	100	96	26	41	12
Learning	0	0	0	0	0	0
Music	0	0	0	0	0	0
News	93	50	85	19	0	0
Religion & Ethics	25	0	0	0	0	0
Sports	42	75	50	0	0	0
Weather	77	50	96	0	0	0
Audio description	BBC 1	BBC 2	ITV	YLE 1	YLE 2	MTV 3
Children's	0	0	0	0	0	0
Comedy	0	25	25	0	0	0
Drama	92	21	100	0	0	0
Entertainment	13	0	0	0	0	0
Factual	35	17	26	0	0	0
Learning	0	0	0	0	0	0
Music	0	0	0	0	0	0
News	0	0	0	0	0	0
Religion & Ethics	0	0	0	0	0	0
Sports	0	0	0	0	0	0
Weather	0	0	0	0	0	0

Sign language	BBC 1	BBC 2	ITV	YLE 1	YLE 2	MTV 3
Children's	0	0	0	0	0	0
Comedy	0	0	0	0	0	0
Drama	0	13	0	0	0	0
Entertainment	0	8	19	0	0	0
Factual	0	11	8	0	0	0
Learning	0	0	0	0	0	0
Music	0	0	0	0	0	0
News	0	0	0	8	0	0
Religion & Ethics	0	0	0	0	0	0
Sports	0	0	0	0	0	0
Weather	0	0	0	0	0	0

Discussion

It must be noted, that this is a very small dataset, collected over four days only and with three channels. Thus, this must be regarded as a pilot and preliminary study. There are more channels available on freeview in both countries. These other channels may differ in the focus audience and their accessibility coverage. For example there are channels focusing on broadcasting programmes for children, others focus on drama programmes or science and nature-related programmes. The other channels and their broadcast strategies have an effect on the numbers of programmes in total across the categories listed, that is if another channel focuses on children's programmes with accessibility features it might result in the channels included in this study having less programmes for children. Also, these changes within categories might be time-related - there might be certain days of the week that focus on a specific categories of programmes, e.g. in Finland, the science-related programmes tend to focus on Thursdays.

Also, the type of the programme broadcasts affect the possibilities for providing accessibility features within the broadcast. Subtitling is provided online and real-time for direct broadcasts while subtitling for a pre-recorded programme can be edited for the final broadcast. The same principles affect the other types of accessibility features as well. It is different to audio describe or interpret into sign language a direct broadcast online and real-time, where the describer or the interpreter cannot think twice, but providing these for a pre-recorded programme for the final broadcast enable editing and refining the final product, that is the signed interpret or the audio description product. Then it is also possible to refine the timing to the pre-recorded programme as well as think about the words and signs for the final edit.

It is noticeable, that some films up to 50 years old, do not appear to have any accessible features or if they do, it might be subtitled only. One has to remember when a TV programme has been audio described, it is a one off process, so that it could be used on other channels too. There needs to be a centralised system for distribution of these audio descriptive parts of the programmes. The Americans seem to provide even more audio description. There is a for need more old films with accessibility features, including all three options studied here, which can be activated by the user separately from each other or in combination if necessary, for example subtitles with audio description or subtitles with signing. It must be appreciated that there is an ever-growing demographic population and if one is able to follow their favourite film from a particular time

period it might be therapeutic. Some of the films form an integral part of the national heritage in both of the countries respectively.

Since the data gathering period in November 2018, there are new developments in audio description in Finland. There are two projects in providing audio description for two programme categories, one for providing audio description for two football matches and the other for audio describing the new Moominvalley series in 13 parts. All of the programmes are broadcast in the first part of 2019. Furthermore, the Finnish Film Foundation has a special grant for the films incorporating audio descriptions starting in January 2019. This is another example of how the EU Audiovisual Media Services Directive [1] is put into action. Furthermore in Finland (from 1st May 2019 onwards), there is a new initiative to include so-called accessibility symbols on TV broadcasts to denote whether the specific programme includes subtitling, multiple audio channels and/ or audio description or is signed.

Acknowledgements

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